

REMARKS

Claims 1, 3-8, 10-15, 17-22, 24-29, 31-36, 38-43, 45-50 and 52-71 have been rejected. By way of this Reply, claims 1, 8, 15, 22, 29, 36, 43, 50, 57 and 71 are amended and claims 7, 14, 21, 28, 35, 42, 49, 56, and 62 have been cancelled.

Claims 1, 3-6, 8, 10-13, 15, 17-20, 22, 24-27, 29, 31-34, 36, 38-41, 43, 45-48, 57-61, and 63-71 were rejected under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over Shinpo et al. (JP 58-128322). Claims 1, 7, 8, 14, 15, 21, 22, 28, 29, 35, 36, 42, 43, 49, 50, 52-57, and 62 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Shinpo.

Shinpo discloses the steps of: (1) hot water extraction of Spirulina; (2) filtering the filtrate through a semi-permeable membrane; (3) DEAE-cellulose chromatography; and (4) obtaining a glycoprotein containing a single component. The present invention is distinguishable in that the Spirulina extracts are obtained by: (1) breaking the wall of Spirulina; (2) hot water extraction; (3) selective precipitation at pH 3.8-4.2 to remove impurities, and (4) obtaining a proteoglycan extract.

Breaking the cell wall of Spirulina is not disclosed in Shinpo. Breaking the cell wall permits substances which are not easily permeable through the wall to be released from Spirulina cells, which facilitates and improves the extraction step.

Shinpo also fails to disclose the step of selective precipitation at pH 3.8-4.2 to remove specific impurities, as expressly recognized by the Examiner. Selective

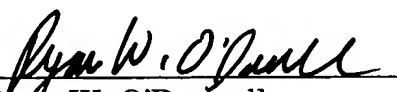
precipitation at pH 3.8-4.2 to remove impurities makes it unnecessary to separate the active components by chromatography; which is more practical and cost-effective than Shinpo. The differences between the extraction steps in Shinpo and the present invention lead to different extracted products with different components; and thus, different efficacy.

The glycoprotein disclosed is further distinguishable from the presently claimed invention in that Shinpo discloses a glycoprotein composed of only a single component. The proteoglycan extract of the present invention consists of multiple components. *See Specification at pgs. 9-10.*

For the above reasons, Applicant respectfully submits that the presently claimed invention is patentable over the prior art. Reconsideration and allowance of the claims is respectfully requested.

Respectfully submitted,

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